

Amendments to the Specification:

Please replace the section of text on page 10, beginning at line 9, with the following section:

--photodetectors, e.g. PMTs, as shown in Figures 1B and 3B. In the Figures, similar elements in different versions of the invention appearing in the various Figures have the same element numbers.—

Please replace the section of text on page 10, line 14 as follows:

--110 is also shown, which causes a Compton scintillation event 442 117 in the first—

Please replace the section of text on page 11, line 6 as follows:

--ionization event 442 117 in the first detector layer 150, followed by a total absorption—

Please replace the section of text on page 11, beginning at line 14 as follows:

-- posterior electrical connection layer 142. A gamma photon 110 is also shown, which causes a Compton ionization event 117 in the first detector layer 150, followed by an ionization event 118. --

Please replace the section of text on page 11, line 18 as follows:

--Figure 2 is a block diagram of a CDC system 200 according to one embodiment. As—

Please replace the section of text on page 12, line 5 as follows:

--sensing logic 254 234. Gating unit 256 is coupled to image memories 264 and 266 to--

Please replace the section of text on page 13, line 18 as follows:

--unrelated coincident events, as shown in Figure 5. figure 5 illustrates a detector head 500 for detection of—

Please replace the section of text on page 14, line 11 as follows:

--validity check is performed by the acquisition computer 262. Figure 4A illustrates a detector head 400 for--

Please replace the section of text on page 15, line 4 as follows:

--7 is a schematic drawing of the arrangement of image memory 700 for associating—

Please replace the section of text on page 19, line 2 as follows:

--events in the second detection layer resulting from incident photons traveling along incident paths 432, 434 from two point—

Please replace the section of text on page 20, line 10 as follows:

--Figure 6B illustrates a graphical representation 601 of an angular probability distribution of detected Compton—

Please replace the section of text on page 29, line 15 as follows:

--from blocks 816 and 826 only if a determination in block 832 indicates that there were exactly two events found in coincidence in a--